

[54] **SYSTEM AND METHOD FOR REMOTE MIRRORING OF DIGITAL DATA FROM A PRIMARY NETWORK SERVER TO A REMOTE NETWORK SERVER**

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[56] **References Cited**

U.S. PATENT DOCUMENTS

4,274,139	6/1981	Hodgkinson et al.	364/200
4,654,819	3/1987	Stiffler et al.	364/900
4,819,159	4/1989	Shipley et al.	364/200
4,959,768	9/1990	Gerhart	364/187
5,051,887	9/1991	Berger et al.	364/200
5,133,065	7/1992	Cheffetz et al.	395/575
5,157,663	10/1992	Major et al.	371/9.1
5,163,131	11/1992	Row et al.	395/200
5,167,032	11/1992	Martin et al.	395/575
5,185,884	2/1993	Martin et al.	395/575
5,212,784	5/1993	Sparks	395/575
5,241,670	8/1993	Eastridge et al.	385/575
5,263,154	11/1993	Eastridge et al.	395/575
5,379,417	1/1995	Lui et al.	395/575

FOREIGN PATENT DOCUMENTS

PCT/US94/
04326 4/2094 WIPO .

OTHER PUBLICATIONS

"Remote StandbyServer", Vinca Corporation, Product Announcement, Sep. 12, 1994.

"Network Server", *Product Depot*, Sep. 1994, pp. 59-60.

"Network Management—Controlling and Optimizing Network Environments", Claudia Graziano, *LAN Times*, Jul. 11, 1994, p. 50.

Emerald Systems U.S.A. & Canada Retail Price List, effective Jul. 1, 1994.

"System Fault Tolerance With No Strings Attached", Bradley F. Shimmin, *LAN Times*, Feb. 28, 1994, vol. 11, Issue 4.

"Playing the Odds", Gary Gunnerson et al., *PC Magazine*, Oct. 26, 1993, v12, n18, pp. 285(28).

"Bulletproofing Your Server", David P. Chernicoff, *PC Week*, Oct. 4, 1993, v10, n39, pN1(3).

"Year-Old NetWare SFT II Still Incomplete: Support for UNIX", Patrick Dryden, *LAN Times*, Oct. 4, 1993, v10, n20, p1(2).

(List continued on next page.)

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[57] **ABSTRACT**

A system for remote mirroring of digital data from a primary network server to a remote network server includes a primary data transfer unit and a remote data transfer unit which are connectable with one another by a conventional communication link. The primary data transfer unit sends mirrored data from the primary network server over the link to the remote data transfer unit which is located a safe distance away. Each data transfer unit includes a server interface and a link interface. The server interface is viewed by the network operating system as another disk drive controller. The link interface includes four interconnected parallel processors which perform read and write processes in parallel. The link interface also includes a channel service unit which may be tailored to commercial communications links such as T1, E1, or analog telephone lines connected by modems.

34 Claims, 40 Drawing Sheets

